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# United States Patent [19] Shen

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[54] **POSITIONING DEVICE FOR A  
CYLINDRICAL LOCK**

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292/358; 292/DIG. 64

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DIG. 53, DIG. 64; 70/224, 476, 477, 478,  
479, 483, 484, DIG. 31, DIG. 32

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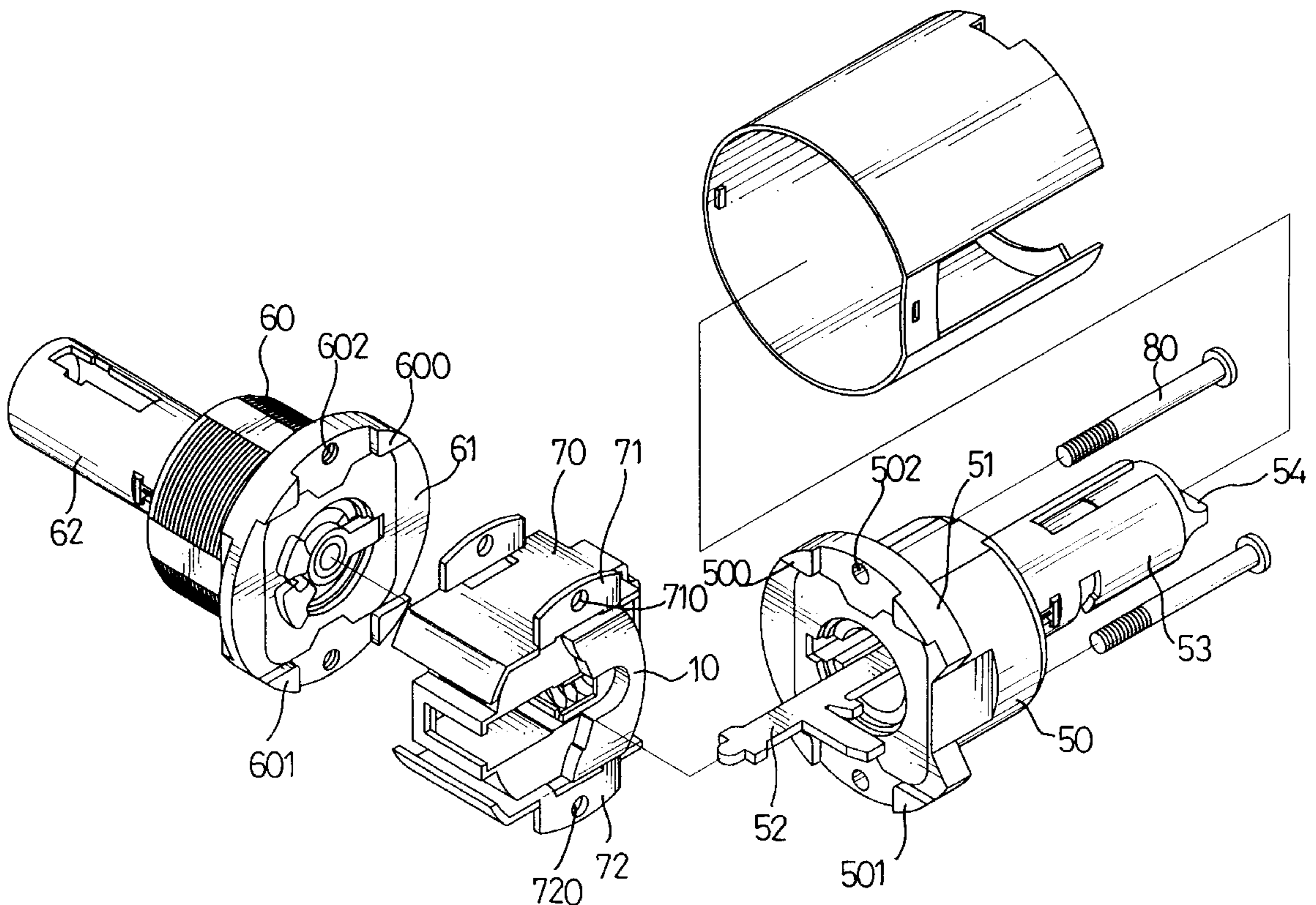
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[57] **ABSTRACT**

A positioning device for a cylindrical lock includes two first upper protrusions and two first lower protrusions respectively extending from an inside hub of the lock, two second upper protrusions and two second lower protrusions respectively extending from an outside hub. A chassis receiving a retractor therein has two first plates extending from a top surface thereof and two second plates extending from a bottom surface thereof. The two first plates of the chassis are received between the two first upper protrusions and two second upper protrusions, and the two second plates are received between the two first lower protrusions and two second lower protrusions such that the chassis is stationed between the inside and outside hub so as to let a pair of screws extend through these easily.

**2 Claims, 3 Drawing Sheets**



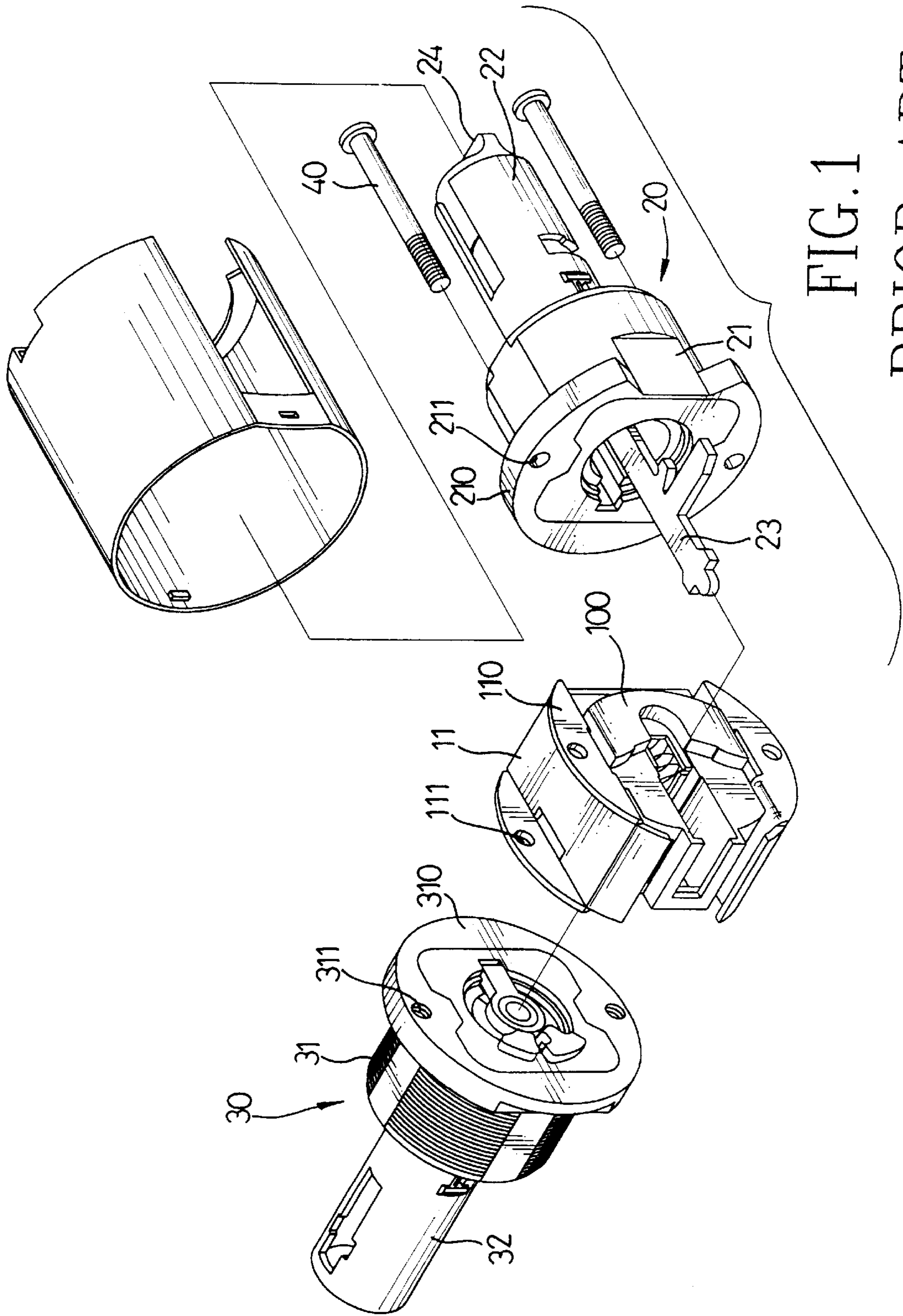


FIG. 1  
PRIOR ART



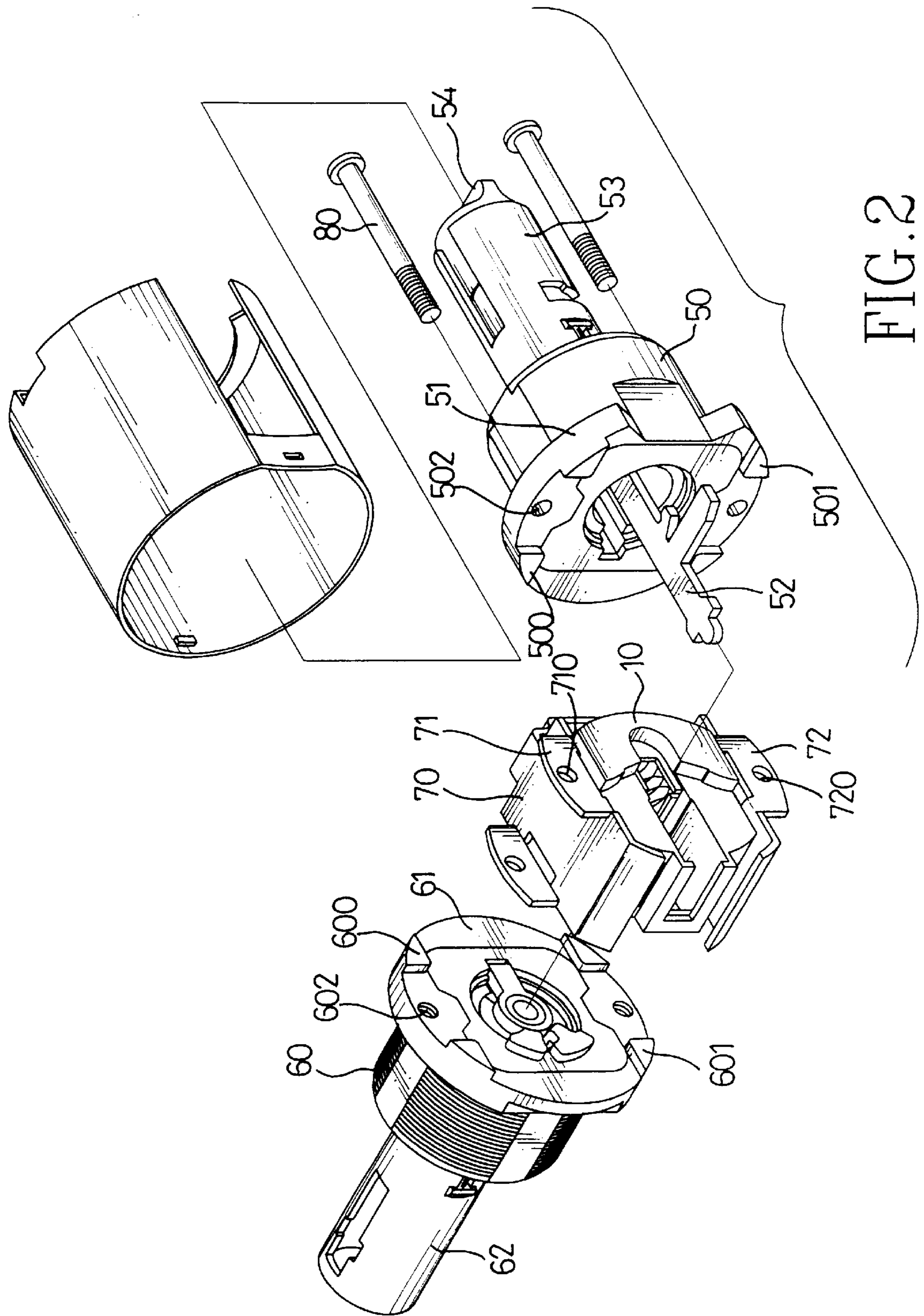


FIG. 2

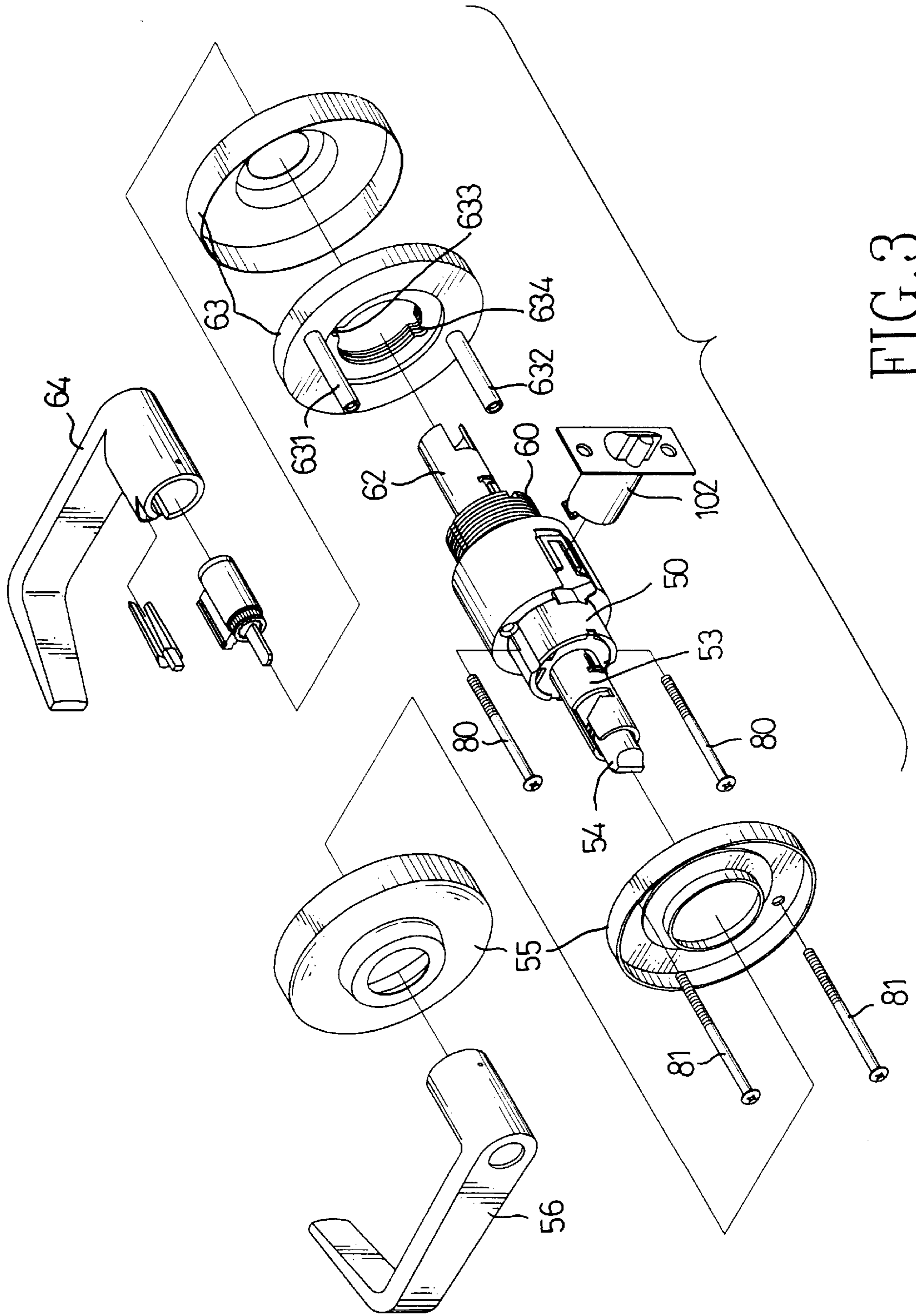


FIG. 3



## POSITIONING DEVICE FOR A CYLINDRICAL LOCK

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present invention relates to a positioning device and, more particularly, to an improved positioning device used in a cylindrical lock so that when a retractor between an inside and an outside sleeve-hub assembly is assembled using a pair of screws, the two sleeve-hub assemblies anchor the retractor so as to facilitate an assembler to manipulate the screws.

#### 2. Brief Description of the Prior Art

FIG. 1 shows a commonly used positioning device for a cylindrical lock, wherein a retractor **100** is received in a C-shaped chassis **11** and an inside sleeve-hub assembly **20** includes an inside hub **21** into which an inside sleeve **22** is partially inserted, a tail piece **23** and an inside turn button **24** respectively disposed to the inside sleeve-hub assembly **20**. An outside sleeve-hub assembly **30** includes an outside hub **31** and an outside sleeve **32** partially inserted into the outside hub **31**. The chassis **11** together with the retractor **100** engaged with a latch bolt (not shown) connected between the inside sleeve-hub assembly **20** and the outside sleeve-hub assembly **30** by a pair of screws **40**, and all of these will be disposed in a door (not shown). An inside escutcheon assembly with an inside handle and an outside escutcheon assembly with an outside handle are then respectively disposed to the door, as known in the art. The inside hub **21** and the outside hub **31** respectively have a flange **210/310** extending radially and outwardly therefrom, each of the flanges **210, 310** having two holes **211/311** defined diametrically opposite to each other therethrough. Two ribs **110** extend from each of an upper side and a lower side of the chassis **11**, each of the ribs **110** having an aperture **111** defined therethrough so that each one of the two screws **40** extends sequentially through the hole **211**, the two apertures **111** and the hole **311** to engage with the outside escutcheon assembly. However, when inserting the pair of screws **40** through the inside hub **21**, the chassis **11** and the outside hub **31**, there is lacks of a proper positioning device to position the three members **21, 11, 31** so that an assembler has to adjust the holes **211, 311** and the apertures **111** to become in alignment with each other. This will increase assembling time of the lock.

The present invention intends to provide an improved positioning device for a cylindrical lock to mitigate and/or obviate the above-mentioned problems.

#### SUMMARY OF THE INVENTION

The present invention provides a positioning device for a cylindrical lock comprising a retractor received in a chassis and in engagement with a latch bolt, an inside hub and an outside hub, an inside sleeve and an outside sleeve operable to rotate with respect to the inside and said outside hub, an inside escutcheon and an outside escutcheon supporting the cylindrical lock. The positioning device comprises two first upper protrusions and two first lower protrusions respectively extending longitudinally from an end face of the inside hub, two second upper protrusions and two second lower protrusions extending from an end face of the outside hub, wherein the end face of the inside hub faces to the end face of the outside hub. Two holes are respectively defined through the inside hub and located between the two first upper protrusions and the two first lower protrusions. Two screw holes are respectively defined through the outside hub

and located between the two second upper protrusions and the two second lower protrusions.

The chassis has two first plates extending upwardly from a top surface thereof and respectively received between the two first upper protrusions and the two second upper protrusions, and two second plates extending downwardly from a bottom surface thereof and respectively received between the two first lower protrusions and the two second lower protrusions. Each of the first plate and the second plate has an aperture defined therethrough. Two screws each extend through the hole, the two apertures and the screw hole.

It is an object of the present invention to provide a positioning device for a cylindrical lock and which positions the chassis between the inside hub and the outside hub so as to easily assemble them together by two screws.

Other objects, advantages, and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an exploded view of a chassis, an inside hub and an outside hub of a conventional cylindrical lock;

FIG. 2 is an exploded view of a chassis, an inside hub and an outside hub and shows a positioning device in accordance with the present invention, and

FIG. 3 is an exploded view of a cylindrical lock in accordance with the present invention.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring to FIGS. 2 and 3, a cylindrical lock comprises a retractor **10** received in a chassis **70** which is a C-shaped member and the retractor **10** is engaged with a latch bolt **102**. An inside hub **50** has a tail piece **52** rotatably received therein and an inside sleeve **53** partially received therein so that a turn button **54** is operatably connected to the tail piece and disposed to the inside sleeve **53**. An outside hub **60** has an outside sleeve **62** partially received therein. Each of the inside hub **50** and the outside hub **60** has a flange **51/61** extending outwardly and radially from an end thereof. An inside escutcheon assembly **55** and an outside escutcheon assembly **63** are respectively mounted to two sides of a door (not shown) and support the cylindrical lock. An inside handle **64** and an outside handle **56** are respectively connected to the lock and located to an inner side and an outer side of the door so that when either the inside handle **56** or the outside handle **64** is rotated, the latch bolt **102** is actuated.

A positioning device comprises two first upper protrusions **500** and two first lower protrusions **501** respectively extending longitudinally from an end face of the flange **51** of the inside hub **50**. Two holes **502** are respectively defined through the flange **51** and located respectively between the two first upper protrusions **500** and the two first lower protrusions **501**. Two second upper protrusions **600** and two second lower protrusions **601** respectively extend from an end face of the flange **61** of the outside hub **60**. Two screw holes **602** are respectively defined through the flange **61** and located respectively between the two second upper protrusions **600** and the two second lower protrusions **601**. The end face of the flange **51** of the inside hub **50** faces to the end face of the flange **61** of the outside hub **60**.

The chassis **70** has two first plates **71** extending upwardly from a top surface thereof and two second plates **72** extend-



ing downwardly from a bottom surface thereof. Each of the first plates **71** and the second plate **72** has an aperture **710/720** defined therethrough. The two first plates **71** are respectively received between the two first upper protrusions **500** and the two second upper protrusions **600**, and the two second plates **72** are respectively received between the two first lower protrusions **501** and the two second lower protrusions **601** such that the hole **502** in an upper portion of the flange **51**, the apertures **710** in the first plates **71** and the screw hole **602** in an upper portion of the flange **61** are in alignment with each other, and the hole **502** in a lower portion of the flange **51**, the apertures **720** in the second plates **71** and the screw hole **602** in the lower portion of the flange **61** are in alignment with each other.

One of two screws **80** extends through the hole **502** in the upper portion of the flange **51**, the apertures **710** in the first plates **71** and the screw hole **602** in the upper portion of the flange **61** and is received in a first notch **633** defined in an upper inner periphery of the outside escutcheon assembly **63**. The other of the two screws **80** extends through the hole **502** in the lower portion of the flange **51**, the apertures **720** in the second plates **71** and the screw hole **602** in the lower portion of the flange **61** and is received in a second notch **634** defined in a lower inner periphery of the outside escutcheon assembly **63** so as to firmly connect the inside hub **50**, the chassis **70** and the outside hub **60** together. Two long bolts **81** respectively extend through the inside escutcheon assembly **55** and threadedly engaged with two tubes **631**, **632** extending from the outside escutcheon assembly **63** to dispose the lock in the door.

The positioning device of the present invention ensures that the chassis **70** is well positioned between the inside hub **50** and the outside hub **60** when assembling the cylindrical lock so that the two screws **80** can be easily extended through a combination of the three parts mentioned above so that an assembling time is effectively reduced.

Although the invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of the invention as hereinafter claimed.

What is claimed is:

1. A positioning device for a cylindrical lock comprising a retractor received in a chassis and in engagement with a latch bolt, an inside hub and an outside hub, an inside sleeve and an outside sleeve operable to rotate with respect to the inside and said outside hub, an inside escutcheon and an outside escutcheon supporting said cylindrical lock, said positioning device comprising:

two first upper protrusions and two first lower protrusions respectively extending longitudinally from an end face of said inside hub, two second upper protrusions and two second lower protrusions extending from an end face of said outside hub, wherein said end face of said inside hub faces to said end face of said outside hub, two holes respectively defined through said inside hub and located between said two first upper protrusions and said two first lower protrusions, two screw holes respectively defined through said outside hub and located between said two second upper protrusions and said two second lower protrusions;

said chassis having two first plates extending upwardly from a top surface thereof and two second plates extending downwardly from a bottom surface thereof, each of said first plate and said second plate having an aperture defined therethrough, said two first plates respectively received between said two first upper protrusions and said two second upper protrusions, said two second plates respectively received between said two first lower protrusions and said two second lower protrusions, and

two screws each extending through said hole, said two apertures and said screw hole.

2. The positioning device as claimed in claim 1 wherein said inside hub and said outside hub each have a flange extending outwardly and radially from an end thereof, said first upper and said first lower protrusions extending from said flange of said inside hub, said second upper and said second lower protrusions extending from said flange of said outside hub.

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